103(a) as obvious over U.S. Patent No. 5,963,373 to Kayanoki (hereinafter "Kayanoki"). The Examiner has concluded that Kayanoki substantially discloses the claimed invention but does not specifically state that the weight ratio of the iron oxide to the titanium oxide may be 0.0005 to less than 0.005. The Examiner asserts that the range of data presented does not support the entire range claimed, and that there are no data points towards the lower weight ratio of 0.0005.

Applicants note that support for the claimed weight ratio of the iron oxide to titanium oxide (0.0005 to less than 0.005) is found on page 17, lines 24-25 of the specification. the lower weight ratio value represents Applicants' experience regarding practical control of the weight ratio. All indications are that the composition produces the desired effects at the lowest weight ratio value claimed.

In the specification, a sol with an Fe_2O_3/TiO_2 ratio of 0.001 is described as Example 4. This value is within the claimed range. As shown in Example 4, the sol having this ratio has high refractivity, excellent scuffing resistance, excellent appearance, excellent dye affinity, and excellent water resistance but does not have photochromism.

	Sol		weather resistance
	Fe_2O_3/TiO_2	photochromism	coloring
Example 1	0.002	none	none
Example 4	0.001	none	none
Comp.Ex. 1	0.02	exhibited	occurred

Both the composite oxide sol having 0.001 of Fe_2O_3/TiO_2 and that having 0.002 of Fe_2O_3/TiO_2 produce the same hard coatings. Even if the composite ratio of Fe_2O_3/TiO_2 is 0.001, the same effects will be shown.

A composite ratio of Fe_2O_3/TiO_2 less than the lowest claimed weight ratio of 0.0005 is difficult to control and is not practical.

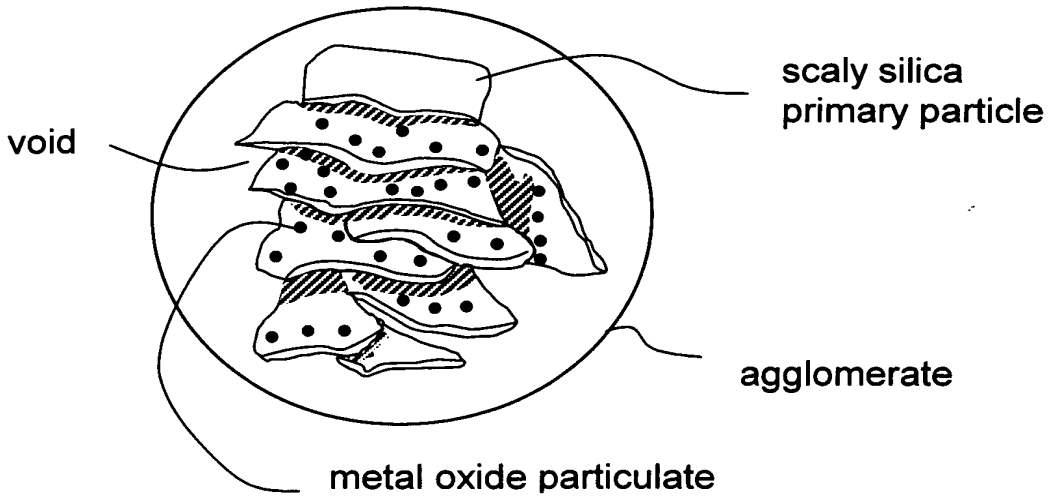
Furthermore, sol containing only TiO_2 (not containing Fe_2O_3) produces neither the desired hard coating liquid nor film.

It is well known that TiO_2 is extremely low in weathering resistance, so that TiO_2 induces decomposition of organic components in the composition such as the organosilicon compound or the epoxy resin and thus deterioration of the film on the surface of the resin substrate, resulting in reduced film durability. The presence of Fe_2O_3 in the claimed ratio remedies this defect.

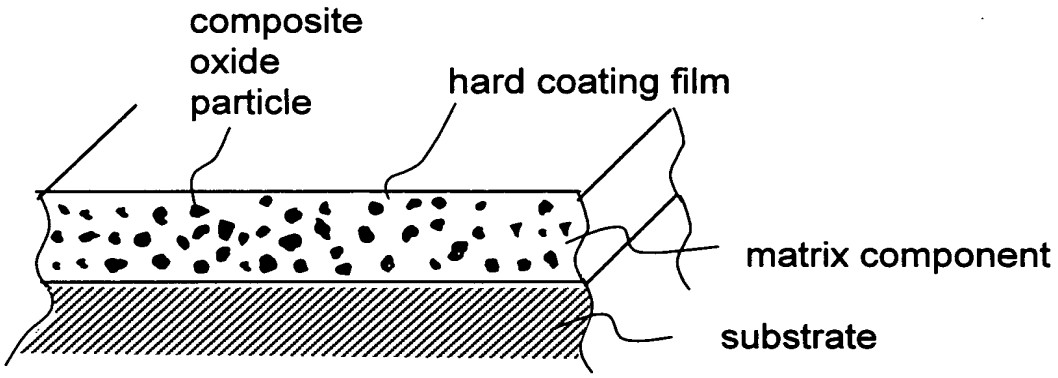
The Examiner also cites U.S. Patent No. 6,077,341 to Terase et al. (hereinafter "Terase") as evidence that it is known that the weight ratio of various metal oxides and silica can be varied to obtain varying properties. The Examiner also maintains that Terase pertains to the composite oxide of the present invention because a composite is simply defined as "a solid material having two or more substances having different physical characteristics and in which each substance retains its identity while contributing desirable properties to the whole."

However, Terase does not support the conclusion reached by the Examiner. Although Terase and the formulation of the present invention are both composites, they differ in significant ways that indicate to one skilled in the art that the properties of the former should not be imputed to the latter. For example, UV shielding properties would be expected to differ depending on whether the shielding particles were distributed only on the surface of the composite, or throughout the volume of the composite.

Terase describes a composite comprising metal oxide particulates and silica agglomerates having voids formed by random stacking of scaly silica primarly particles, with metal oxide particulates supported on the surfaces, and the inner surfaces in the voids, of the silica agglomerates, as shown in photographs in Terase and in the following figure:



In contrast, the coating liquid of the present invention comprises a matrix-forming component and particles of the composite metal oxide. The film obtained by using the coating liquid has the following structure:



That is, the composite metal oxide particles are dispersed in the matrix formed from the matrix-forming component.

The composition of the film of the invention is different from the composite of Terase.

Applicants also note that the present invention was filed on December 14, 1998 as a PCT application claiming priority on the basis of Japanese Patent Application No.

346187/1997 filed on December 16, 1997. The present application proceeded into the national phase from international phase on June 15, 2000. Terase was published after the priority application of the present application was filed. Therefore, Terase does not serve as prior art in the examination of the present application. Circumstances in which a factual reference need not antedate the filing date are set forth in MPEP § 2124. These circumstances include situations where the facts shown in the reference are evidence that, as of an application's filing date undue experimentation would have been required, that a parameter absent from the claims was or was not critical, that a statement in the specification was inaccurate, that the invention was inoperative or lacked utility, that a claim was indefinite, or that characteristics of prior art products were known. However, Terase is not being used for any of these reasons. References which do not qualify as prior art because they postdate the claimed invention may be relied upon to show the level of ordinary skill in the art at or around the time the invention was made. Terase shows, for example, that the knowledge that metal oxide particulates may have an ultraviolet-ray shielding function was available around the time the present invention was made. However, the Examiner is attempting to denote the inventive contribution of Terase to the level of ordinary skill in the art. Terase shows (col. 3, lines 40-49) that particular ratios of metal oxides must be selected if two or more desired properties (e.g., ultraviolet-ray shielding and visible light transmittance) are to be produced simultaneously. Likewise, in the present invention, a metal oxide ratio is determined to optimize two properties. In neither case is the determination of a metal oxide ratio "ordinary skill in the art." In addition, Applicants note that Terase (col. 3, lines 29-39) teaches that situations in which metal oxide particulates are not supported stably on silica surfaces are undesirable. This statement supports Applicants' distinction between a composite made up of randomly stacked scaly silica primary particles and the continuous matrix of the present invention. One of ordinary skill in the art would not extrapolate the behavior of metal oxide particles in Terase to the present invention.

For these reasons, the rejection of claims 1-12 for obviousness over Kayanoki is believed to have been overcome.

In view of the above, it is submitted that the claims are in condition for allowance. Reconsideration of the rejections and allowance of claims 1-12 are respectfully requested.

Respectfully submitted,

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